

Watson (W.P.)

(WITH THE COMPLIMENTS OF THE AUTHOR.)

AN ADDRESS

— ON —

CHOLERA INFANTUM.

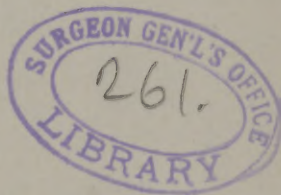
— BY —

WILLIAM PERRY WATSON, A.M., M.D.,

JERSEY CITY, N. J.

Assistant to the Chair of Diseases of Children in the New York Polyclinic.

REPRINTED FROM THE "ARCHIVES OF PEDIATRICS," AUGUST, 1885.

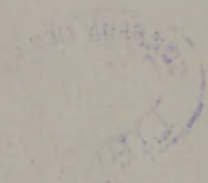


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- I. NOMENCLATURE.
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- IV. SYMPTOMATOLOGY.
- V. TREATMENT—
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 - 3. Medicinal.
- VI. DISCUSSION.



CHOLERA INFANTUM.*

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WILLIAM PERRY WATSON, A.M., M.D.,

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MR. PRESIDENT, LADIES AND GENTLEMEN:—When I accepted your invitation, unanimously extended at the June meeting of this Society, to open the discussion on cholera infantum at this meeting, I did so with reluctance; not because of the lack of interest and anxiety which cases of the disease inspire; but because of its comparative rarity in our midst, and of a want of real advances recently made in its etiology, pathology and treatment.

NOMENCLATURE.—Cholera infantum is essentially an American disease, occurring principally in children under

* An address delivered by invitation before the District Medical Society for the County of Hudson, N. J., in opening the discussion on Cholera Infantum, July 7, 1885, with discussion thereon by Drs. Stickler, Kyte, Chabert, Quimby, McNutt and Pitts.

two years of age, in our large cities, during the months of July, August and September, and is characterized by a profuse watery flux (purging and vomiting) with high temperature, rapid prostration and striking emaciation, ending usually in collapse within a few hours.

It has been described by various writers as weaning brash (*atrophia ablactatorum*), follicular enteritis, apyretic and febrile follicular diachrisis, choleriform gastro-intestinal catarrh, choleric fever of infants, choleriform diarrhea, gastro-intestinal catarrh, follicular enteritis of infants, thermic fever of infants, and sporadic infantile cholera. The term cholera infantum seems most appropriate, and is now generally used by all authors.

Statistics of the relative prevalence of this disease with the other summer diarrheas of young children are unreliable, because of the tendency of very many physicians to call all severe gastro-intestinal diseases in their little patients as true cholera. That many cases of gastro-enteritis, or entero-colitis, simulate cholera infantum, is true; but they are not cases of the latter, and it should not be charged with them. This state of affairs is very much to be regretted. The sooner the profession uniformly recognizes certain terms to designate certain morbid conditions, the more rapid and satisfactory will be our advance, not only in the etiology and pathology, but also in the therapeutics of disease.

But you and I will never live to see the day but that there will be that uncertain rabble in the profession—more clamorous for the mighty dollar and the brilliant though fidgety reputation with certain classes, which follows the diagnosis of a terrible disease with a wonderful cure, than for the advancement of medical science. All honor to him who makes the least advance in our science, and all dishonor to him who not only stultifies himself, but you and me, by grave prognoses in trivial cases. It is our privilege and our duty—standing, as we do, on a plane perhaps a little higher than the average of the eighty thousand physicians in this country; it is, I repeat, our privilege to find out, and our duty to report,

diseases as they are, and not as it might best suit our immediate ends.

During the hot summer months a large number of cases of severe gastro-intestinal diseases are unwarrantably laid at the door of cholera infantum, and especially is this the case when a burial permit is required. If our statistics are to be of any value whatever, this should not be so.

ETIOLOGY.—While cholera infantum is not epidemic, yet, it is not unlike Asiatic cholera in many respects. Most cases occur before the end of the second year of life, and about twice as many cases occur in the first as in the second year. A debilitated system, unhealthy hygienic surroundings, and an existing or even recent gastro-intestinal irritation, are the contributing or predisposing causes, while a continued high atmospheric heat, or sudden changes in a moderately oppressive temperature, and sudden changes in the diet, are usually the exciting causes. An infant whose vitality has been more or less taxed by previous disease, either acute or chronic, will be very apt to have an attack of cholera if kept in any of our large cities during the hot weather.

In the tenement districts, where the streets are narrow, uncleaned and reeking with filthy garbage of decaying vegetable and animal matter; where the rooms are small, with low ceilings and narrow windows (if any); and where, in some instances, the whole family, perhaps of five or six persons, live and sleep in one or two rooms; in these districts cases of cholera infantum will occur on the slightest exciting cause. An infant, having had any irritation of the stomach, either in functional vomiting or simple catarrh, or, any disorder of the intestinal canal, as simple diarrhea or entero-colitis, or constipation alternating with the former, will be liable to an attack of cholera, especially following any indiscretion in its diet. When the atmospheric heat reaches 80°, and from that runs up to 95° or more, with hot, oppressive nights, infants with any of the predisposing causes mentioned, are frequently prostrated with an attack of cholera.

Sometimes the atmospheric heat may be very high for several days, and the infant pass through it safely only to be prostrated on a sudden change in the atmosphere to a cool dampness. Atmospheric heat may vary from 90° to 95° for two or three days without many infants being attacked, but on the night of the third day, and during the continuance of the hot wave, the cases are very frequent. Again, the temperature of the atmosphere may vary from 80° to 90° for a week or more without fatal results, when a sudden change, either to cooler or warmer weather, will prostrate many. The next, and frequently the only, exciting cause, is change in the diet—including, under this head, sudden weaning or change in artificial food, use of fruits unripe or unhealthy, and indigestible or irritating food of any kind. In addition to these general causes, there are frequently special exciting causes. Thus, the appearance of the menses of the nurse may change the character of the milk to such a degree as to induce an attack of cholera in the infant. Coition of the nurse, after long abstinence, is said to have caused cholera in the infant nursed. *Apropos* of this, Dr. R. B. Gilbert, of Louisville, Ky., recently related to me two cases where this circumstance undoubtedly gave rise to the attack. Any nervous shock or sudden fright, grief or joy, of the nurse, may bring on an attack of cholera in the infant.

The weight of authoritative evidence is against the prevalent idea that dentition is the cause of cholera infantum. Who ever heard of cases of cholera in teething children during the winter? Isn't cholera infantum rare in the country? and yet there are babies there, and they get their teeth, and frequently more rapidly than babies in the city. I have yet to see a case where I could not find some other cause than teething for the attack. The benefits thought to follow incision of the gums are imaginary in part, and in part—if there are any—due to local blood-letting. The incision closes up in a few hours, and the same pathological condition would again be operative.

A most peculiar and interesting fact exists—that infants

may be surrounded by all these contributing, predisposing and exciting causes, and yet remain in good health; while, on the other hand, one of the least causes of all may rapidly prostrate an infant in previous good health. Cholera infantum is said to be more prevalent among males than females, and instances are related (Meigs and Pepper) where it appeared to be hereditary.

PATHOLOGY.—The morbid changes found *post mortem* in cases dying of cholera infantum are as yet meagre and unsatisfactory. A very complete examination and report is made by Dr. William H. Welch, of John Hopkins' University, of the intestines of an infant dying of cholera sent to him by Dr. J. Lewis Smith, in which he says: * "The general result of the examination is to confirm the views that cholera infantum is characterized by an acute intestinal inflammation."

Vogel found cyanosis of the skin, tenacity of the serous membranes, dryness of the parenchymatous organs, black masses of grumous blood in the veins and heart, the mucous membrane of the intestines of a rosy tint and denuded of epithelium, the kidneys infiltrated and the appearance of an acute desquamative catarrh of the tubules.

Steiner found ecchymoses of the intestinal mucous membrane, acute enlargement of the mesenteric glands and general anemia, fatty degeneration and edema of the brain.

Day found enlargement and softening of Peyer's patches with an erythematous condition of the lining mucous membrane of the intestines.

Ripley believes that the exciting and controlling cause is insolation, and that its variant symptomatology as compared with its manifestations in the adult is due first to the manner of exposure, and, second, to the special vulnerability of the gastro-intestinal organism of the infant, produced, for the most part, by errors of diet: the primary lesion being a thermic paresis of the vaso-motor nerves supplying the affected parts.

* System of Medicine, edited by Pepper, Philada., 1885, vol. 2, page 744.

Rilliet and Barthez, than whom none have done more scientific work in pediatric pathology, believe that cholera infantum is a catarrh which has localized itself upon the digestive tract and the great sympathetic nerves.

Meigs and Pepper, while recognizing the general alteration of nutrition, the change in the entire blood-mass, and the results of the local irritant action of the morbid contents of the gastro-intestinal canal, still believe, with Rilliet and Barthez, that the implication of the sympathetic nervous system only explains the collapse. Writing in 1882 they say: * “We are fully prepared to understand how the symptoms of cholera collapse might be explained upon the supposition of a wide-spread powerful irritation of the fibres of the sympathetic nerve, so richly distributed to the coats of the vessels throughout the alimentary canal, and which have such intimate relations with the nervous supply of the whole arterial system, as well as of the heart and lungs. Thus, we can most readily explain in this way the small, thready pulse; the cold, pale and shrunken skin; the asphyxia and coldness of the breath; the diminution in the formation of urea and in the secretion of urine. * * * At the same time the probability is that the vaso-motor nerves of the intestinal walls themselves are paralyzed from exhaustion of their excitability, so that dilation of the vessels occurs with profuse discharge of serum.” Experimenters have demonstrated on animals that section of the intestinal distribution of the sympathetic is followed by a profuse watery secretion. No pathological lesions of the sympathetic are discernible at this period of development, while the morbid changes found *post mortem*, previously referred to, could be produced by the high temperature and the violent reaction in the entire metamorphosis of tissues. Again, would inflammatory action, however intense, account for the cases which begin, develop, and end in a few hours?

It would appear, then, from the fulminating character of the symptoms, from the pathological changes

* Practical Treatise on the Diseases of Children, 7th ed., Philada., 1882.

found *post mortem*, and from the most successful plan of treatment, that cholera infantum is due to an irritation of the sympathetic nervous system, accompanied possibly, but probably followed, by an aggravated gastro-intestinal inflammation.

SYMPTOMATOLOGY.—While cholera infantum is more liable to attack infants debilitated, or those exposed to high atmospheric heat and its depressing influences, and those supplied with indigestible food, yet, it sometimes attacks those in good hygienic surroundings with proper nourishment. The symptoms usually appear suddenly, sometimes in the night, in an infant in good health, or with a previously mild diarrhea. In either case the passages suddenly become watery, profuse and frequent; this is followed in a few hours, or it may be accompanied, by vomiting, at first of the contents of the stomach, but soon of a sero-mucous fluid, and at times there is only dry retching. In some cases the passages are not so very frequent, but each one is of large quantity. Their pathognomonic characteristics are fluidity and quantity. The passages are usually of a straw color, sometimes called “mustard stools,” and are odorless. In some cases the passages have a brownish color (due to intestinal follicular hemorrhage) and may contain small pieces of mucus or flocculi of fecal matter; these passages are very fetid. They usually occur without apparent effort or distress and are at times projectile. The number of passages varies from twelve to forty or fifty in the twenty-four hours; frequently there will be two, three, or four distinct passages in each napkin removed. The retching and vomiting of everything taken into the stomach continues unabated. The infant is restless, tossing about in its crib, etc.; facies has an anxious and distressed look. The anterior fontanelle, at first prominent, soon becomes depressed; pulse is small and rapid, 120 to 150; respirations increased, 30 to 40. The rectal temperature is usually not less than 104° F., and may run up to 107° F. The head is hot and the extremities are cool, and the pillow on which the infant is lying is very hot. The

tongue and lips at first are moist, but soon become dry and parched. The abdomen is usually retracted and flaccid, but may be tympanitic. The anus is not reddened or excoriated. The urine is diminished in frequency and quantity. This condition may develop in a few hours and the infant may continue in this state for twenty-four to forty-eight hours, and then, with the lessening of the vomiting and purging, improvement may begin, or, the retching and purging continuing, it may pass into a state of collapse.

In this condition the infant lies in a limp, listless way; the skin of the face has a pale, bluish-white color and is drawn tightly over the bones; the eyes are sunken far into the orbits; the eyelids and lips are open from feeble contraction of the muscles; the pupils are contracted, the lobes of the ears look waxy and are cold; the nose is sharp, pointed and cold; the scalp has a cyanotic appearance; the anterior fontanelle is greatly depressed and the extremities are bluish and cold. The breathing is irregular and shallow, due to hyperemia of the lungs from the feeble circulation as well as from the urea retained in the system; the pulse, if any, is usually thready and unsteady. The frequent serous discharges continue, the vomiting or retching usually ceases with the onset of coma, when there may be tonic and clonic spasms of the muscles of the face, due to the acute anemia, fatty degeneration and edema of the brain. If the urine is examined at this time albumen and casts will be found. The coma deepens and the infant dies, sometimes in a convulsion, usually from failure of the heart's action.

In some cases, however, the discharges become thicker and less frequent, the quality and frequency of the pulse improve, the respiration becomes deeper and more regular; a little fluid is retained on the stomach, and the reaction thus fairly begun will continue in a moderate or excessive degree, largely dependent upon the management of the case.

TREATMENT.—It will be advantageous to consider the treatment of cholera infantum under three headings, viz. :
1. Hygienic or prophylactic. 2. Dietetic. 3. Medicinal.

1. *Hygienic or Prophylactic*.—The infant should be removed from the influence of all the predisposing causes previously mentioned; when possible it should be kept in the country or by the seashore during the heated term; should it be impossible to keep it there all the time, it should be taken on frequent excursions on the water and into the country. See to it that the living room is kept clean, well-ventilated and so that plenty of sunlight can enter it, if possible; keep the infant out of draughts, especially at nights. Give it a tepid bath containing a little fine salt night and morning followed by gentle friction all over the body. Don't let it sleep in any of its day-clothes, but when they are removed at night have them hung up by the window so that they will be thoroughly aired in the morning. Flannel should be worn next to the skin, especially at night. Don't let it sleep on feathers; a hair or straw mattress, especially for the head, with an even smooth surface, should be used. Keep the head cool and the extremities warm. Avoid excitement, fright and continuous noises. If it is restless during the day, keep it out in the fresh air, which is the best as well as the most natural sedative. If restless at night with cool extremities, especially the feet, and a hot head, equalize the circulation by a hot mustard foot-bath. If the feet are usually cool it will be advisable to constantly keep woolen stockings on them. Perfect cleanliness of body and linen should be scrupulously attended to.

2. *Dietetic*.—Infant feeding is one of the most important as well as the most intricate of problems we have to deal with in the management of young children. Time and space will not admit of extended details here. You will frequently be called to prescribe for young children for whom your best and only prescription will be the regulation of the diet. No food has ever been made that will agree with all children. Some do well on one, some on another; so that you must find a suitable food for each case. Simplicity in the preparation of any food is of special importance.

There need be no question but that the mother's milk

under all ordinary circumstances, is *the* food for that infant, and in case where that is not obtainable, a wet-nurse will be next in value.

Next to human milk cow's milk is most available and easily prepared. The various forms of preparing it need not be mentioned here. At the present time the peptonized form seems most easily assimilated, though considerable care is necessary in its preparation, and difficulty in keeping it sweet during the hot weather might easily prevail.

One important point in the management of these cases should never be lost sight of—*i. e.*, not to overlook the stomach.

If the infant has sickened while using some one of the prepared foods, it would be advisable to try some preparation of milk, providing human milk were not obtainable.

During the height of the disease it will be proper to keep all milk away from the infant, unless it is at the breast. Ripley teaches that high temperature produces such changes in the gastric juice as to destroy its digestive properties. Kумысс in small and frequently-repeated doses will often allay the thirst, arrest the vomiting, and improve the character of the stools. Brush's is the best, when it is lumpy it should not be used. Gum water (5j, gum acacie in 3iv water), flavored with a little lemon or orange juice, given with an equal part of carbonic-acid water will frequently be retained. The white of an egg beaten up in a cup of barley water and given in dram-doses will act favorably in preference to anything else in many cases. Frozen beef-tea has also been recommended. White-wine whey, diluted, will frequently be retained and will be nourishing. It may be given in dram-doses every hour or even half-hour. The uncontrollable thirst due to the profuse serous flux causing an inspissated condition of the blood should be relieved either by some of the preparations mentioned above, by the sucking of ice tied up in a soft piece of muslin, or, even by small and oft-repeated doses of ice water. An enema of luke-warm water, about a gill at a time, frequently seems of benefit

in relieving this distressing symptom. It will be advantageous to add about one-quarter of a teaspoonful of fine salt to each enema, which can be repeated hourly. Oatmeal water, a cupful to a quart of cold water, allowed to stand for three or four hours and then filtered and flavored with orange juice, in teaspoonful doses, sometimes will be retained, and will change the character and frequency of the stools. Suggestions will arise in each case which can be used to advantage.

3. *Medicinal*.—That the therapeutics of cholera infantum have been eminently unsatisfactory is but too evident from the variety of remedies used and suggested. Vogel, questioning the absorption of medicine in the stomach or intestines, in these cases, on account of the strong exosmotic current which takes place toward their mucous membrane, advises medication through the vagina, urethra, and bladder.

The indications are, to control the vomiting, check the diarrhea, reduce the high temperature, and sustain the strength of the infant.

It is not advisable to give cathartics at any time.

The use of the various preparations of opium is always attended with more or less danger. Some authors, however, commence the treatment with a full dose of opium, and then gradually decrease the quantity. It may, to a certain extent, control the spasmodic intestinal contraction, and perhaps in some measure allay the nervous irritability. If used in any stage of the disease it should never be given by the stomach, but either hypodermically or in an enema. Thus, in the stage of evacuation, two to five drops of laudanum in a gill of warm water may be used every two or three hours, or, as is very highly recommended by Eustace Smith, one-thirtieth of a grain of morphia in five drops of ether may be used hypodermically and repeated in an hour if necessary. He relates one case where a child on the verge of collapse was treated in this way and recovered.

As a rule, all preparations of opium should be withheld when the pupils become contracted and symptoms of coma are apparent.

A poultice of one part of mustard to three parts of flour, made into a thin paste with hot water, placed over the dorso-lumbar spine, will frequently relieve the excessive vomiting and retching. Ripley speaks very highly of the use of chloroform, two to ten drops, according to the age, in an emulsion of acacie, frequently repeated. He also uses it hypodermically when not retained on the stomach. Small doses of creosote, chloroform and iodine in camphor water, repeated every half hour, or oftener if the first few doses are rejected, will often stop the vomiting.

R_y—Creosoti, gtt., $\frac{1}{6}$;
Tinet. iodini, gtt., $\frac{1}{2}$;
Sp. chloroform, gtt. ij.;
Aq. camphoræ, ℥j.

[[The iodine may also be used with bismuth and lime water, or chalk mixture. Small doses of carbolic acid in similar vehicles are recommended. Two drops of aromatic sulphuric acid with five drops of a solution (U. S. P.) of morphine is very well spoken of by Meigs and Pepper. Salicin, salicylate of lime and of bismuth, in three to five-grain doses, have been recommended; also hypodermics of quinine and morphine.

Dr. Boardman Reed, of Atlantic City, speaks very highly of minute doses of corrosive sublimate in these cases. Calomel in one-twelfth grain doses, frequently repeated, has also been successfully used. Belladonna has also been successfully used. Theoretically, there are some indications for its use, *i. e.*, the peripheral anemia with engorgement of the vascular system of the gastro-intestinal canal. A combination of morphia and atropia, $\frac{1}{30}$ grain of the former with $\frac{1}{1200}$ grain of the latter, used hypodermically, would be beneficial.

A spiced poultice, made of two drams each of powdered ginger, cloves, and cinnamon, with an ounce of cornmeal, and moistened with whisky or brandy, placed on the epigastric and umbilical regions, and covered with oiled silk, seems to relieve the gastro-intestinal distress.

During this stage and especially in the stage of collapse, perfect rest in the horizontal position on a hair or

straw mattress, with firm support for the head on a level slightly above the body, should be insisted upon in all cases whether mild or severe. When the stomach will retain some one of the astringents, their use might be advisable to check the persisting diarrhea. Don't give too much medicine. There is more harm done in giving too much medicine than in not giving enough.

The temperature can be kept at any desired point by the use of the rubber coil. The most convenient form is that in the "Fever-Cot for Infants," described by me in the ARCHIVES OF PEDIATRICS, vol. I., No. 12, Dec. 1884. I am now having made a rubber cot with spiral springs which will be more comfortable for the little patient to lie upon, and will be equally effectual in controlling the temperature.

In spite of careful, judicious treatment, collapse may follow. Here the primary indication is to sustain the strength of the infant until reaction—and too much cannot be said against meddlesome interference. Though the vomiting has ceased, and especially if there is beginning coma, yet very little is absorbed by the stomach. The infant should not be moved, except in changing the napkins, even to give it a mustard bath, as recommended by some. Bottles of hot water should surround the flannels with which the extremities are wrapped up. Three or four thicknesses of flannel, wrung out of equal parts of hot whisky and water, should be laid over the precordium and covered with oiled silk; or a hot mustard poultice may be placed there for a few minutes. A poultice of mustard and flour, one part of the former to two of the latter, should be placed over the nape of the neck. An enema of a gill of hot water with ten drops of brandy or two to five grains of caffeine may be given every hour. With returning consciousness small quantities of white-wine whey, alone, or mixed with two or three parts of a decoction of arrowroot, (5i to 0j) may be retained and absorbed. As the infant improves the diet can be gradually increased, care being taken, however, not to produce over-reaction. If it will, let it take plenty of fluid, so

as to relieve as rapidly as possible the overloaded kidneys. As soon as it is able to be moved it should be taken to the seashore or country, where its convalescence will be very rapid.

Duration.—The duration of cholera infantum varies in a great measure according to the condition of the infant when attacked, and the contributing, predisposing, and exciting causes surrounding it. Vogel mentions cases where the pulse and diastolic sound of the heart disappear almost with the first liquid passages. It usually dies in the course of the third day and may die in five or six hours; again, the disease may last five or six days, and then run into entero-colitis. An infant, apparently recovering, may die suddenly without any return of the symptoms.

It will require careful watching and nursing until restored to near its previous health.

I have thus, at considerable length, gone into the details of the treatment of cholera infantum, because your success will depend largely, if not wholly, in careful attention to such minutiae. In conclusion, ladies and gentlemen, for the sake of your professional reputation, which should always be more precious to you, and will eventually be more profitable to you, than the temporary fickle praise of the little sick one's friends, do not call your cases of gastro-enteritis, or entero-colitis, cholera infantum.

I thank you for your kind attention, and hope a full and free discussion of this subject will follow.

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DISCUSSION.

Dr. Stickler, of Orange, said; I was interested in the subject of Dr. Watson's paper, because of the thorough manner in which he treated it, and because its consideration is of great importance at the beginning of our "heated term." In dwelling at considerable length upon the treatment of the disease, he recommended the best known remedial agents, drawing special attention to the comparatively few which are best adapted to the majority of the cases. My own experience teaches me that each

case demands treatment which varies to a greater or less extent from any particular prescribed rule of medication. The following simple supplementary treatment I have found to be very serviceable in modifying the diarrhea: One teaspoonful of the scrapings of boiled flour in milk, three or four times daily, or in *all* the milk used by the infant when fed upon cow's milk. When the child is "at the breast," a small quantity of the mother's milk may be taken from the breast at frequent intervals during the day, mixed with the "scrapings," and administered to the child. The flour may be prepared in the following manner: Put one pint of flour into a suitable bag, suspend it in a vessel of water and boil four hours. Next dry in the oven till the flour becomes dry and hard. In this state it is ready for use. Much may be said in favor of removing infants from the city in early summer to prevent the development of cholera infantum, and still more may be said in favor of sending them to the mountains or seashore to renew their exhausted powers during convalescence from the disease in question. Pathologically, I think, it is incorrect to call this disease "cholera infantum," as it is not true cholera developed in children, accompanied with the morbid tissue changes characteristic of the latter disease; but resembles it only in some of its most important symptoms.

Dr. Kyte, of Jersey City, said: I have been very much interested in Dr. Watson's paper, and fully agree with him in the points made against the injurious—yet so very common—practice followed by many physicians in calling all their cases of gastro-intestinal diarrhea cholera infantum. In addition to the many appropriate plans of treatment enumerated, I have merely to suggest that I have frequently used with benefit in these cases five to ten drops of glycerine in a teaspoonful of barley water, every ten to thirty minutes; and, when the lips and tongue become dry and parched, I paint them frequently with glycerine.

Dr. Chabert, of Hoboken, said: The infant is usually in a state of collapse when the doctor is called in, and I have found useful the oil of valerian in sugar or saccharated pepsin, two drops of the former rubbed up in twenty grains of the latter, to which I sometimes add two drops of laudanum; of this, I give from half a grain to two grains, as required.

Dr. Quimby, of Jersey City, said: Coming in so late, I have not had the pleasure of hearing much of what I pre-

sume to have been a very able contribution to the literature on cholera infantum. Therefore I am unable to discuss or criticise fully its merits.

That portion of the paper that I heard which related to the treatment of cholera infantum, the most of which—such as change of air, regulating its sanitary surroundings, attention to the clothing, bathing, and that great care and attention should be given to the selection of, and the proper kind of diet, etc.—I fully agree with. I will make a single criticism, however, in reference to the manner of allowing children to suck pieces of ice previously wrapped in a cloth, as recommended by the author of the paper. It is a well-known fact, that ice is, or may be, a preserver or conveyer of the germs of many forms of disease. It is also a well-known fact that many of our lakes and ponds—from which much of our ice is gathered—are the receptacles of much of the filth of their surrounding neighborhood. This filth—naturally being congealed and entrapped within the ice—may be innocent enough in its frozen state, but when melted and taken directly into the warm stomach may let loose myriads of micro-organisms which would only aggravate and render fatal the disease from which the little patient is suffering. Therefore, my plan for some time has been (especially since the germ theory has been brought forward) not to give ice directly to the child, but having a vessel of water surrounded by ice, and giving it to the child frequently in teaspoonful doses. I believe there is a good deal of efficacy in the cautious administration of cold water thus uncontaminated by any of the forms of bacteria which might exist in the ice. Water, I believe, is a better stimulant to the young infant, and it certainly is a better solvent, than alcohol. In reference to the etiology of the disease, I believe the agencies mostly concerned in the production of the disease are: 1. Hot weather. 2. Bad and impure atmosphere of our cities and villages. 3. Improperly-selected, badly-cooked, and unwholesome food. 4. The nervous irritation naturally produced by dentition. These agencies, singly, or more frequently combined, produce the worst forms and fatal cases of cholera infantum.

In reference to the pathology of the disease, I am inclined to think the disease is confined mostly to the large intestines. In the examinations of eighty-two cases of enterocolitis of children by Dr. J. Lewis Smith, he found inflammation of the mucous membrane of the colon in all but

one case; the ileum was involved in forty-nine cases; upper part of the small intestines in twelve cases. This corresponds with several cases I have examined myself.

I agree mainly with the author of the paper in the method of treatment which he suggests, viz.: warm clothing, change of air: carefully-selected, well-cooked food, regulated in accordance with the age and condition of the child. Never overload the stomach, especially if nausea be present. Warm bathing, followed by friction, an aromatic flaxseed poultice, will be found soothing and highly beneficial to the bowels.

Some of the gentlemen present have said that they have not much faith in treatment, or the administration of drugs. I must say I differ emphatically with, or from, that assertion, for I have very great faith in the cautious and timely administration of a few of the properly-selected medicines. If I am called to visit a case, at a reasonably early period of the disease, I feel quite confident that my patient will be restored.

The plan of treatment I have adopted for a good many years has been, after regulating the diet, clothing, and sanitary surroundings, by giving, among other remedies, the following mixture:

R—Bismuth sub. carb., ℥ii;
Tinc. mur. ferri, gtt. xxiv;
Tinc. nux vomica, gtt. viii;
Pulv. ipecac, gr. xii;
Sulph. morphia, gr. $\frac{1}{2}$;
Aq. anisi, ℥ii,
Syr. gaul, ℥i.

Dose from half to a teaspoonful every one, two, or three hours, as may be indicated; and, as a rule, there is an absence or a deficiency of any bile in the stool I have been in the habit of giving also the following powders, two or three times a day, or until a proper degree of bilious secretion was established:

R—Pil. massa hyd., ℥i;
Pul. Doveri, gr. v.;
Pul. ipecac, gr. i.;
Bismuth sub carb., ℥i;
Oil anisi, gtt. i.;
Sacch. alb., ℥i.;
Ft. chart. X.

These internal remedies, variously modified according to age, etc., together with a warm medicated flaxseed

poultice laid over the abdomen, to be changed twice in twenty-four hours, and kept on from three to six days, have, in my hands, proved beneficial, and usually successful. I have great faith in ipecac, whether given in small or large doses; sometimes I give it to produce nausea. It has great power, in combination with some of the alkalies, to restore the natural secretions of the gastro-mucous membrane of the intestines, and helps to remove the offensive discharges so characteristic of cholera infantum.

Dr. S. J. McNutt, of New York, said: In a rather extensive hospital and college-dispensary practice among children, I hardly ever see more than ten or twelve cases of cholera infantum during the summer. In addition to the many valuable suggestions of treatment already made, I will say, that where the preparations of opium are contra-indicated, I frequently use *cannabis indica* with satisfactory results in controlling the nervous symptoms. In the stage of collapse I have used one-grain suppositories of musk, which can be kept in position by the nurse.

Dr. Pitts, of Hoboken, said: I fully concur in most that has been said in reference to the treatment. I generally use some alkali with a large proportionate quantity of aromatic spirits of ammonia as a sustaining measure. I wish more fully to call attention to the fact that the laity, and many in the profession, never give the little patients water, or seem to think of such a thing as their wanting it. Some authors seem to be astonished to think of giving it. I am sure I have checked the disease by giving all the water the little one would take, when all remedies tried had failed and collapse was about taking place. I use it simply as a drink, giving them all they will take, and feel that it is a very important matter for the profession to recognize in connection with their regular treatment.

Some further desultory discussion on the disease in question being caused by dentition, germs, etc., followed:

Dr. Watson, in closing the discussion, said: Not many years ago nearly all the diseases of young children were ascribed to "worms or teething." Fortunately for the little ones, and to the credit of the profession, "worms," as etiological factors, are now limited to the "oracle," and there are those in this hall to-day who will live to see the day when "teething" will be consigned to the same element. Cholera infantum is a rare disease. As *Dr. McNutt* tells you, so do I, that I can count on my

fingers all cases seen during a season. It is also an acute disease, ending, perhaps, in a few hours, at most in a few days. It may be preceded, and frequently is followed, by gastro-enteritis or entero-colitis, the causation and treatment of which are entirely different from the former. Our subject for discussion to-day was cholera infantum, and to that alone have I called your attention in my address.

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